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Three Brackish Water Rotifers from Korea

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적 요

1984년 4월에 강원도 일원의 경포호, 송지호, 영랑호 등의 기수역에서 채집된 윤형동물을 동정한 결과 *Notholca liepetterseni, Keratella cruciformis eichwaldi, Dipleuchlanis propatula propatula*의 2과 1종, 2아종이 확인되어 이들을 모두 재기재하였고 아울러 도판을 작성하였다. 이중 *Notholca liepetterseni*는 한국 미기록종이다.

Key words: taxonomy, brackish water rotifers, Korea.

INTRODUCTION

Since Hada (1936) had reported 14 species of Korean freshwater Rotifera, limnological and ecological studies of this taxon had been continued untill Song and Kim (1989) carried out taxonomic study for the first time in Korea. After Song & Kim (1989), many taxonomic works have been performed (Chung *et al.*, 1990, 1991a,b, 1992a,b; Kim *et al.*,1991). As a result, 134 species, 15 subspecies, 9 varieties, and 9 forms of rotifers have been recorded from Korea so far (Chung *et al.*, 1992a), but all these records have been

concentrated on freshwater species. For a taxonomic study on brackish water rotifers, we examined specimens collected from three brackish water lakes on the east coast of Kangwŏn-do, Korea in April of 1989. As a result, *Notholca liepetterseni, Keratella cruciformis eichwaldi, Dipleuchlanis propatula propatula* were identified. Among them, *Notholca liepetterseni* is newly recorded from Korea and the other two species were not studied taxonomically and reported just in lists of limnological studies (Yamamoto, 1953; Cho, 1976; Mizuno *et al.*, 1980). So, we redescribed and illustrated all of the identified species.

The classification system is based on Ruttner-Kolisko (1974), Koste (1978) and Bartoš (1959).

SYSTEMATIC ACCOUNT

Phylum Rotifera 윤형동물 문
Class Monogononta Plate, 1889 단성 강
Order Ploima Hudson and Gosse, 1886
Family Brachionidae Wesenberg-Lund, 1899
Genus *Notholca* Gosse, 1886

1. *Notholca liepetterseni* Björklund, 1972 (Fig. 1f)

Notholca liepetterseni Björklund, 1972 (p. 53, figs. 14E-H, table 4B); Koste, 1978 (p. 125, pl. 28, figs. 3E-H).

Material examined: 3 inds., Lake Yŏngnang, April 22, 1989 (S. M. Yoon, G. S. Min and M. O. Song).

Description: Lorica oval, rounded caudally, 125-129 μm long and 85-87 μm wide. Anterodorsal margin with 6 spines; 2 median spines 9-18 μm long and slightly shorter than lateral spines; 2 submedian spines shortest and 3-8 μm long; 2 lateral spines 16-20 μm long. Anteroventral margin without spines and with wide, shallow and slightly serrated median notch. 2 sharp, long and mobile lateral spines present on posterior half of lorica and 22-29 μm long.

Remarks: In size and shape, *N. liepetterseni* is very similar to *N. striata* (O. F. Müller, 1786), but the mobile lateral spines, in mean, are markedly longer in *N. liepetterseni* (Björklund, 1972; Koste, 1978). Björklund (1972) performed biometrical analysis with samples from Norway and eastern USA and stated that there was no overlapping in spine length between these two species. *N. striata* has vertical stripes on dorsal plate, but *N. liepetterseni* does not (Koste, 1978). Hada (1939) recorded *N. striata* var. *biremis* (Ehrenberg, 1832) from marine and brackish waters in Japan, which is very similar to *N. liepetterseni* in sizes of lorica length and mobile lateral spines. We think that Hada (1939)'s *N. striata* var. *biremis* may be *N. liepetterseni* or a closely related species of it. *N. liepetterseni* is cold-stenothermic and dominates in winter and early spring, while *N. striata* dominates in the late spring and early summer (Björklund, 1972). *N. liepetterseni* is newly reported from Korea.

Genus *Keratella* Bory de St. Vincent, 1822

2. *Keratella cruciformis eichwaldi* (Levander, 1894) (Fig. 1e)

Anuraea eichwaldi Levander, 1894 (p. 62, pl. 3, fig. 41).

Anuraea cruciformis var. *eichwaldi* Levander, 1901 (cited from Ahlstrom, 1943).

Keratella cruciformis var. *eichwaldi:* Ahlstrom, 1943 (p. 453, pl. 38, fig. 11); Yamamoto, 1952 (p. 28, fig. 72);

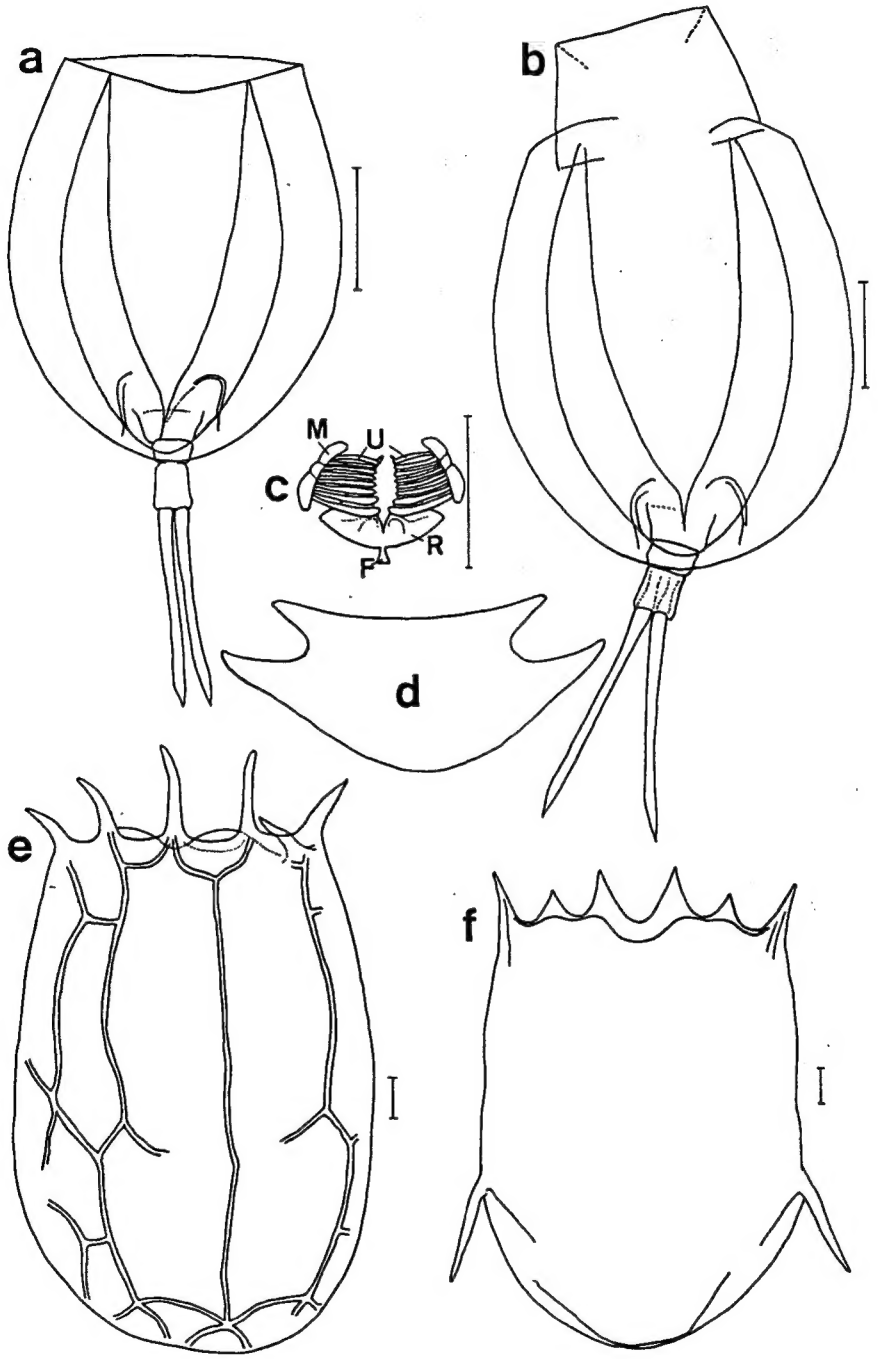

Fig. 1. a-d, *Dipleuchlanis propatula propatula* (Gosse, 1886): a, whole animal; b, whole animal with head; c, trophi (M: manubrium; U: unci; R: rami; F: fulcrum); d, cross section of lorica. e, *Keratella cruciformis eichwaldi* (Levander, 1894). f, *Notholca liepetterseni* Björklund, 1972. (Scales: a, b, c = 50 μm; e, f = 10 μ)

Yamamoto, 1953 (p. 156, pl. 1, figs. 14, 15); Yamamoto, 1960 (p. 391, fig. 6A); Hada, 1939 (p. 498, fig. 1).

Keratella cruciformis f. *eichwaldi:* Koste, 1978 (p. 110, pl. 23, fig. 14).

Keratella eichwaldi: Koste & Shiel, 1987 (p. 1006, fig. 29: 3).

Material examined: 11 inds., Lake Yŏngnang, April 22, 1989 (S. M. Yoon, G. S. Min and M. O. Song); 20 inds., Lake Songji, April 21, 1989 (S. M. Yoon, G. S. Min and M. O. Song); 2 inds., Lake Kyŏngp'o, April 22, 1989 (S. M. Yoon, G. S. Min and M. O. Song).

Description: Lorica subovate, compressed dorsoventrally, 145-158 μm long and 88-100 μm wide. No posterior spines. Anterodorsal margin with 6 spines, which slightly divergent; 2 median spines longest. Dorsal plate slightly granulated and with 2 pairs of large plaques along median line, which extending about full length of lorica. Transverse ridge of antero- and posterocarinal plaques interrupted. Lateral and caudal margins of lorica with 9 pairs of lateral and marginal plaques and 1 posteromedian remnant. Anteroventral margin without spines, round and with shallow median notch.

Family Euchlanidae Bartoš, 1959

Genus *Dipleuchlanis* de Beauchamp, 1910

3. Dipleuchlanis propatula propatula (Gosse, 1886) (Fig. 1a-d)

Diplois propatula Gosse in Hudson and Gosse, 1886 (vol. 2, p. 87, pl. 24, fig. 2).

Euchlanis subversa Bryce, 1890 (p. 77, figs. 44, 45).

Dipleuchlanis propatula: Collin *et al.*, 1912 (P. 164, figs. 319, 320); Bartoš, 1959 (p. 405, pl. 72, figs. H, CH, J); Yamamoto, 1949 (p. 44, fig. 9); Mamaril and Fernando, 1978 (p. 127, fig. 62); Myers, 1930 (p. 380, pl. 22, figs. 5-7).

Dipleuchlanis propatula propatula: Koste, 1978 (p. 144, pl. 40, figs. 6a-e); Koste and Shiel, 1989 (p. 86, fig. 2: 2a-f).

Material examined: 15 inds., Lake Kyŏngp'o, April 22, 1989 (S. M. Yoon, G. S. Min and M. O. Song).

Description: Lorica oval in outline, truncate in front, and rounded posteriorly. Dorsal plate concave and smaller than ventral one all around; posterior portion gradually narrowing, obtusely pointed at posterior end; with width about 2/3 of ventral one, 150-163 μm long and 92-100 μm wide. Ventral plate convex, 150-170 μm long and 124-139 μm wide. Dorsal and ventral plates connected with deep sulci (Fig. 1d). Inner margins of sulci gradually narrowing, tapering abruptly at posterior portion and making spine like shape under microscope. Lateral edges of two plates almost parallel and somewhat elevated. Head connected with anterior margin of lorica by a cuticular membrane. Foot of 3 sections. Two cylindrical toes very long (75-86 μm), about 1/2 of dorsal plate length, slender, parallel sided, and tapering to short points, without swelling before tips. Trophi (Fig. 1c) modified malleate type; rami triangular in ventral view; unci consisting of 8 long teeth, which decreasing in size toward dorsal part and with swollen tips.

Remarks: In his original description, Gosse (in Hudson and Gosse,1886) described the inner margins of lateral sulci as the edges of a cleft on dorsal plate and placed this species in the genus *Diplois* of family Salpinadae (= family Mytilinidae). He also erroneously stated that the smaller plate was ventral and there were three acute spines at the base of foot. Bryce (1890) corrected these errors. He found the smaller plate was dorsal and there was no cleft on it. He also clarified that Gosse's (in Hudson and Gosse, 1886) three spines at the base of foot were just optical presentments of acute angles formed by inner margins of sulci of lorica, posterior margin of dorsal plate and a side protection of a foot. We agree with Bryce (1890).

ABSTRACT

One species and two subspecies of rotifers inhabiting several brackish water lakes on the east coast of Korea are redescribed and illustrated. *Keratella cruciformis eichwaldi* and *Dipleuchlanis propatula propatula* are the known species, and *Notholca liepetterseni* is newly reported from Korea.

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